

# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

July 12, 2011

# Precipitation and Snowpack

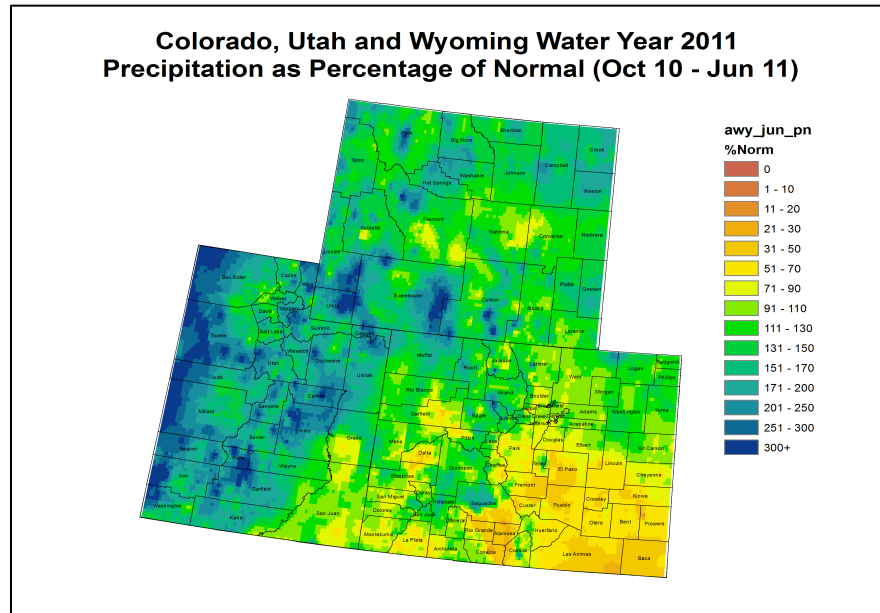


Fig. 1: October – June precipitation as a percent of average.

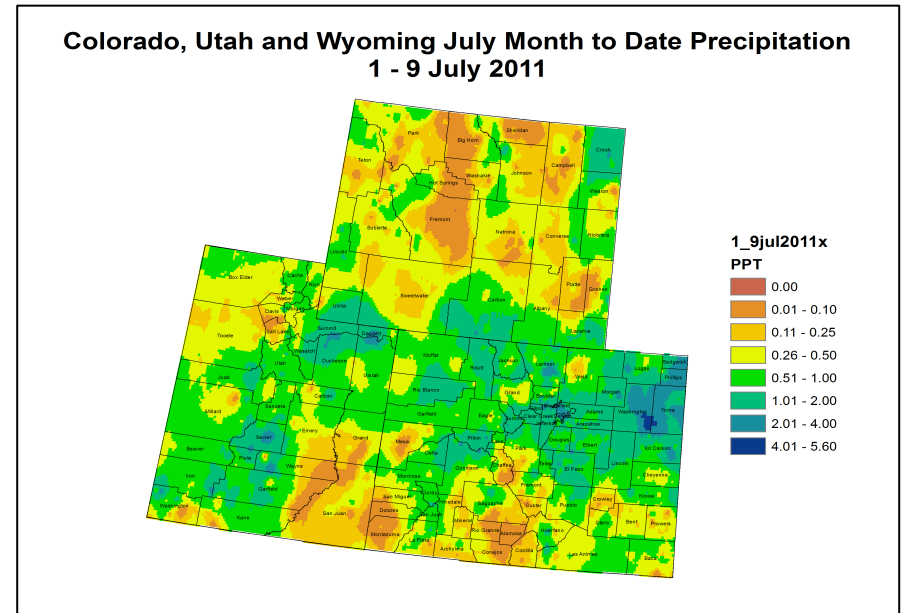


Fig. 2: July month-to-date precipitation in inches.

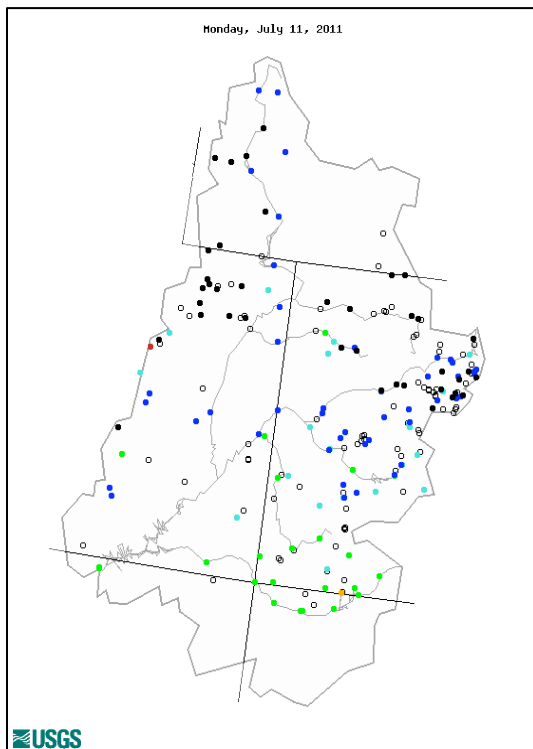
For the water year to-date, most of the Upper Colorado River Basin (UCRB) has seen above average precipitation (Fig. 1). Some areas of the Upper and Lower Green River basins in northeast Utah and southwest Wyoming have received in excess of 300% of their average water-year precipitation. The valley areas and the Four Corners region have been the driest parts of the UCRB, receiving between 50% and 90% of average precipitation. East of the UCRB, northeast Colorado has seen near to above average precipitation, while southeast CO and the San Luis Valley have been very dry, receiving less than 50% of their averages.

For the beginning of July, precipitation was widespread across the northern portion of the UCRB and the eastern plains (Fig. 2). Areas of northeast UT and northeast CO have received over 2 inches of moisture month-to-date. Southeast CO has received between a quarter inch to an inch of moisture, helping to prevent further deteriorating drought conditions. The Four Corners region and the San Luis Valley have remained relatively dry, with many areas receiving less than a tenth of an inch of moisture.

# Streamflow and Water Supply

As of July 11<sup>th</sup>, about 98% of the USGS streamgages in the UCRB recorded normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal 7-day average streamflows with 64% of the gages recording flows above the 75<sup>th</sup> percentile and 30% reporting high flows (Fig. 3). Key gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT have above normal 7-day average streamflow at the 93<sup>rd</sup> and 97<sup>th</sup> percentiles, respectively (Fig. 4). Streamflow on the San Juan River near Bluff, UT is at the 44<sup>th</sup> percentile.

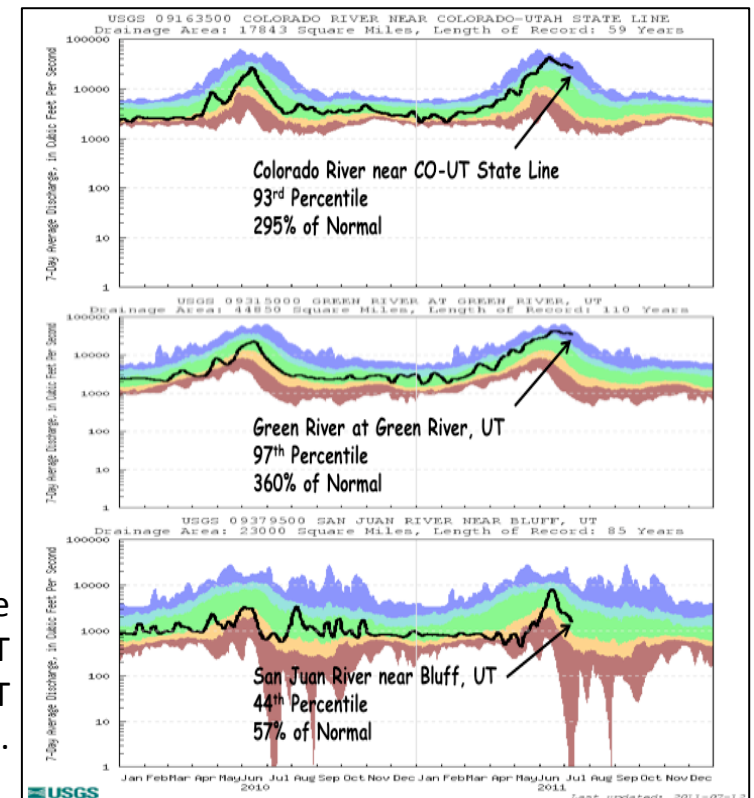
Most of the major reservoirs in the UCRB have continued to see large storage volume increases since the beginning of July. Storage volumes at McPhee and Navajo reservoirs have begun decreasing. All of the major reservoirs above Lake Powell are currently above their average July levels. Lake Powell's storage has increased 3.7% month-to-date and is currently at 86% of average.



Explanation - Percentile classes							
<span style="color: red;">●</span>	<span style="color: darkred;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: lightgreen;">●</span>	<span style="color: blue;">●</span>	<span style="color: black;">●</span>	<span style="color: white;">○</span>
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 3: 7-day average discharge compared to historical discharge for July 11<sup>th</sup>.

Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



# Water Demand

This month so far, above average temperatures have been seen across most of the UCRB and eastern plains of CO. Much warmer temperatures (4° to 8° above average) were observed over the Four Corners, the San Luis Valley and southeast CO. The warmer temperatures have contributed to higher potential evapotranspiration (PET) in drought stricken areas. In the Four Corners, PET is currently just above average, on track with the drier years. In the San Luis Valley and in the Arkansas basin, PET is currently tracking above the highest ET year, during the drought of 2002 (Fig. 5). This means that any precipitation that does fall in the area will quickly be lost again to the atmosphere and will be of little benefit in alleviating current drought impacts.

Soil moisture conditions remain poor for the San Luis Valley. Soil moisture is above average along the Wasatch range in UT, in the northern CO mountains, and in northeast CO. Satellite imagery of vegetation conditions show very dry vegetation with little growth around the Four Corners, the San Luis Valley, and southeast CO (Fig. 6). Vegetations conditions are moist for the northern portion of the UCRB and are near average for northeast CO.

## Precipitation Forecast

A deep monsoonal moisture plume will begin to shift eastward today with significantly drier air moving in from California. As a result areas in the southwestern part of the UCRB will begin to see less thunderstorm coverage beginning today, with dry conditions spreading north and eastward through the end of the week. Storms that do develop should also be moving a bit faster than seen in previous days, but the risk of flash floods and mudslides will remain high due to the already saturated soils. Quantitative Precipitation Forecast shows 0.5 inches of precipitation across the entire basin through the end of the week, with the western slope of the Colorado mountains picking up over an inch. By Friday most of the UCRB will experience little if any convection with some breezy conditions developing over the higher terrain and temperatures returning to near or slightly above normal. Generally dry conditions will persist over the basin through this weekend before the next surge of monsoonal moisture moves into the area by early next week. Expect scattered thunder showers to return, as well as slightly cooler afternoon high temperatures.

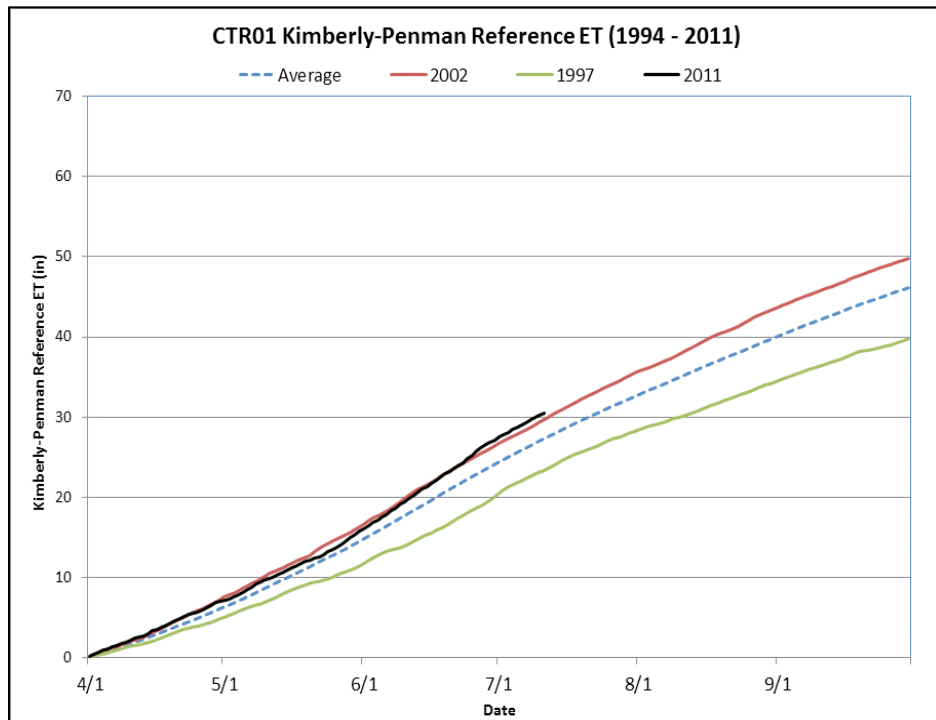


Fig. 5: Reference evapotranspiration since April 1<sup>st</sup> at Center, CO in the San Luis Valley.

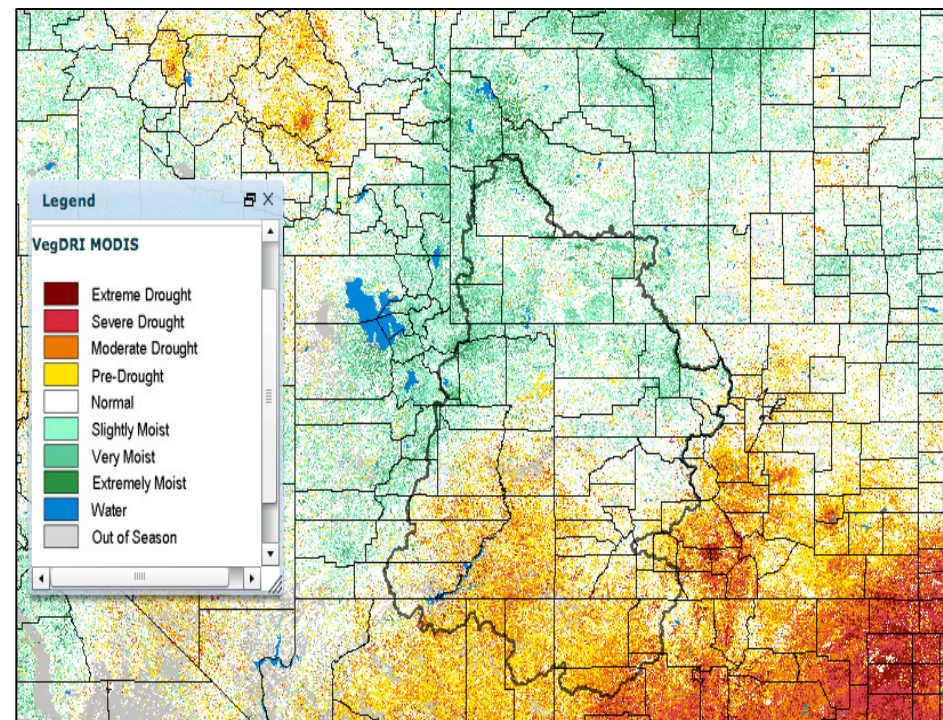


Fig. 6: July 10<sup>th</sup> VegDRI map, based on satellite-derived observations of vegetation.



# Drought and Water Discussion

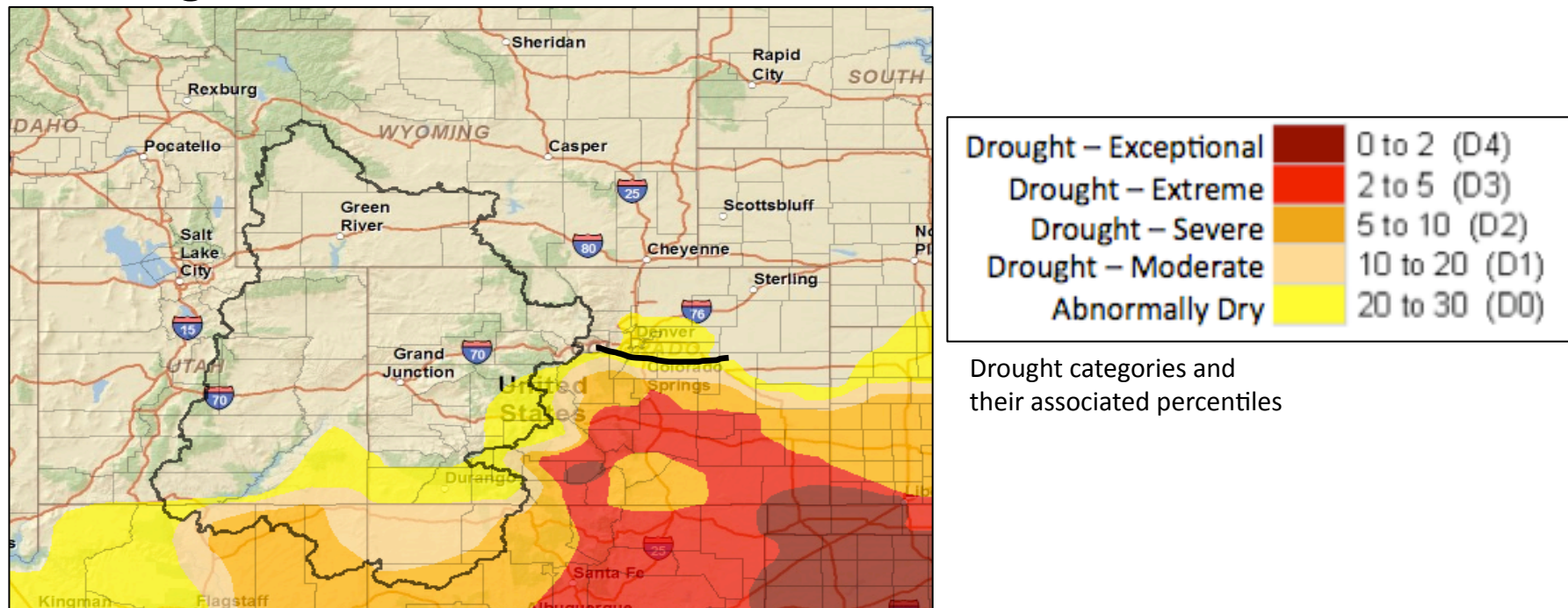


Fig. 7: July 5<sup>th</sup> release of U.S. Drought Monitor for the UCRB

Status quo is recommended in the UCRB for the current U.S. Drought Monitor (USDM) map (Fig. 7). With two weeks of continuous afternoon showers across the northern Front Range, conditions have greatly improved. It is recommended that D0 be retracted southward (removed above the black line, Fig. 7).

Local experts have advised us that southwest Cheyenne County is worse than what is currently depicted. In this data sparse region, we are deferring to their observations and recommending that the gradient be tightened in the southwest portion of the county with an expansion of the D2 line.

Finally, an expansion of the D4 in the San Luis Valley is recommended—a slight westward expansion into Rio Grande County and south into Costilla and Conejos counties to cover more of the valley floor would be more representative of conditions there.